

AVIATION

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Aerial view of old fortifications at Panama City

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2

SPECIAL FEATURES

DESCRIPTION OF THE BARLING BOMBER
PROPOSED INTERNATIONAL AIRCRAFT CODE
ORGANIZING THE NATIONAL AIRWAY SYSTEM
NEW YORK—NEWPORT AIR SERVICE INAUGURATED

THE GARDNER, MOFFAT CO., INC.
HIGHLAND, N. Y.
225 FOURTH AVENUE, NEW YORK

Entered as Second-Class Matter, Nov. 22, 1920, at the Post Office at Highland, N. Y.
under Act of March 3, 1879.

THE Wright Aeronautical Corporation announces that it has acquired by merger the assets and business of the Lawrance Aero Engine Corporation.

By this acquisition, the Wright Company adds to its present line of water cooled airplane motors the Lawrance line of air cooled motors.

The Lawrance Company has been the pioneer in the development of air cooled motors and to-day has the only fully developed line now being produced in this country.

The increased engineering and production facilities resulting from the merger of the Lawrance and Wright Companies will result in an increased speed of development in the air cooled type of engine, which is rapidly becoming a vital factor in aviation.

WRIGHT AERONAUTICAL CORPORATION
Ft. Worth, Texas, U.S.A.



W R I G H T

JULY 9, 1923

AVIATION

VOL. XV. NO. 2

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THOMAS-MORSE AIRCRAFT CORPORATION

CONTRACTORS TO U. S. GOVERNMENT

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The development of this plane, of which six have been built for experimental purposes, called for an unusual amount of research work because of the many really new features in its design

and construction.

But the fact that it has passed the many and exhaustive Navy tests and that thirty-eight additional machines of this design have been ordered, speaks volumes for the utility and correctness of this new creation in aeronautics, as well as for the ability and progressiveness of the organization responsible for it.

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The International Aircraft Code

WHEN the Commission of Jurists encountered in France an aircraft code met at The Hague, it was expected that some little law or statute would result from the deliberations. Conflicting international law, particularly in matters as to subject to law or statute generally, and the important issues are usually settled after lengthy discussion between nations. The result of The Hague conference was a series of conventions, and as it must be subjected to the approval of all nations and made effective by treaty negotiation, it only covers points that are already accepted as law in international usage of war.

The concluding article makes this clear by stating that "the code is for as specific rules as have been laid down, and except in the case of the provisions of Chapter VII (Violence against Persons and Goods) of these rules or conventional provisions which that nation law and procedure respectively, aircraft personnel engaged in hostilities shall be treated as prisoners of war and completely applicable to land troops in view of the custom and practice of international law and the serious deliberations and conventions to which the States concerned are parties."

The code is subject to the proposed code that does not contain any of the provisions of Chapter VII (Violence against Persons and Goods) of these rules or conventional provisions which that nation law and procedure respectively, aircraft personnel engaged in hostilities shall be treated as prisoners of war and completely applicable to land troops in view of the custom and practice of international law and the serious deliberations and conventions to which the States concerned are parties."

The code is also personally against military forces, military works, military establishments or depots, factories, manufacturing plants and well known centers engaged in the manufacture of arms, ammunition, or destructive military equipment, or lines of communication or transportation and for other purposes.

It will be noted, this part of the code will be enforced by the almost any way that has been laid down, and except in the case of the provisions of Chapter VII (Violence against Persons and Goods) of these rules or conventional provisions which that nation law and procedure respectively, aircraft personnel engaged in hostilities shall be treated as prisoners of war and completely applicable to land troops in view of the custom and practice of international law and the serious deliberations and conventions to which the States concerned are parties."

The code is also personally against military forces, military works, military establishments or depots, factories, manufacturing plants and well known centers engaged in the manufacture of arms, ammunition, or destructive military equipment, or lines of communication or transportation and for other purposes.

Our National Airways

OUR readers' particular attention is directed to the article appearing in this issue which describes the work accomplished to date by the Airways Section of the Army Air Service in an endeavor to give the United States a system of well planned and well equipped airways.

The permanent importance of a national airway system for national defense as well as for commercial aviation has frequently been stressed in these columns. Just as a canal that would be valuable without canal bases equipped with dockyards, fuel stations and depots from which it can draw its maintenance and means of operation, so an air fleet because a separate study of these does not exist a general organization of airports and airways where it can find shelter, maintenance and means of repair and refueling. Likewise, commercial airplanes cannot safely be operated on regular schedules, between cities if the necessary ground organization of airports, emergency fields, route markers, weather forecast stations is lacking.

The building up of a national airway system is a large undertaking, for it involves many thousands of miles of air routes. The establishment of permanent airports along these routes as well as the work of clearing them, and so on, is a task of no small magnitude that nothing short of national cooperation can bring it into being. If we are to have a national airway system, we need the closest collaboration of the federal, state, county and municipal authorities, together with the helpful assistance of civic leaders, trade organizations, commercial associations, etc. For this purpose it is necessary to spread the idea that a national airway system is a national investment and a national concern of the first class. All those interested in the future of American Aviation can help in this pioneer work, the maintenance of which will be their greatest reward.

In the meantime, the Airways Section deserves the greatest praise for the forwarding manner in which it is handling this question despite its limited means of action.

The New York—Newport Air Line

THE inauguration of the New York—Newport air line is another important step forward in the development of American Commercial Aviation.

The great saving in time which the high speed Landing Air Yachts offer the traveler on this route should do much to popularize the service, while the moral and financial prominence of its business indicates that public air transport begins to command confidence. This is a happy augury for the future of Commercial Aviation in the United States.

Barling Bomber is Ready for Trial Flights

World's Largest Airplane, Assembled at Wilbur Wright Field
To Be Tested July 15

The assembling of the Barling Bomber, the largest airplane in the world, is almost completed, after several months' work at the Army Air Service Depot at Wilbur Wright Field, Dayton, Ohio. According to present plans, the trial flight will be made on July 15. First Lt. James Edgar Wade and Harold K. Hanna have been selected tentatively as the pilots. Both are now stationed at McCook Field.

In the cramped quarters of the hangar, it gives a startling impression of enormous size, but, as the field, among other places, particularly the contrast will be even more impressive. Even the latest design of Martin Bomber, with its 74-ft. wing span, will be comparatively small.

The Barling Bomber is a triplane, or, more accurately speaking, a 7 1/2 plane, since the mid plane is of narrow chord,

tips of the top and bottom planes, eliminating most of its disadvantages, and then for the following reasons:

First, it gives better engine support than a biplane. A single engine can be mounted along the narrow chord wing.

Second, it makes the question of the airplane, including landing gear, engine, guns, and other systems, fit of the air engine, etc., possible in a standard Army biplane, leaving only the top and outer wings and the main engine to be assembled in the open. This would be impossible with the larger gap of the biplane. This advantage is being greatly appreciated in the present assembly at Wilbur Wright field.

Third, it leaves the central body of the usual triplane unobstructed, making landing and loading easier.

Fourth, it provides a smaller span than that of a biplane,



Official Photo, U. S. Army Air Service

The Barling Bomber (via 400 hp. Liberty engines) ready for its trial

and the ailerons are on the top and bottom planes only. The wing spread from tip to tip is 126 ft., height 26 ft., and overall length 65 ft. The greatest capacity is 6 tons, or 5,000 gal. The oil capacity is 1,556 lb., or 151 gal. Six Liberty engines are required to power the airplane, and the maximum crew necessary to operate it will consist of four men. Specifications require that not more than 5,000 lb. of bombs shall be carried at one time, but very anything as large as a 30,000 lb. bomb developed, the Barling could lift and fly it for two hours. The weight of the airplane loaded will exceed 50,000 lb., and the specifications call for a flying speed of not less than 90 m.p.h.

The location of the air was designed for the Army Air Service by Walter H. Barling, who is at present with the Engineering Division at Dayton, supervising its assembly. It was constructed in the Williamson Aircraft Corp. of Hawthorn Heights, N. J.

Design

The materials used throughout the ship are of the "safest first" type. The basic material is spruce, which is more reliable than other aircraft material. Nearly all of the main beams are of 60,000 lb. wood, rather than the nickel steel of 150,000 lb. used for the NC-4. Duralumin is employed for pulley brackets and parts under relatively less stresses. Baldauf pulleys with ball bearings are used everywhere in the outside. The outer landing gear axle steel is specified as 150,000 lb. elastic limit. Steel tubing was 50,000 and 130,000 lb.

As stated heretofore, the Barling Bomber is a 7 1/2 plane, which arrangement of aerodynamic pressures assist of the advan-

tage, reducing the necessary width of the longer chord the most costly dimensions is longer construction.

Fifth, the fact that ailerons appear only on the top and bottom planes does away with the stem of interference with the narrow chord wing.

Constructional Features

The fuselage, which is built in sections, is of monocoque type, that is, one strengthened by longitudinal, bulkheads and cross, as opposed to the simple monocoque type, which is a shell of wood without other structural reinforcements. The main deck runs through the tail portion of the fuselage without bulging the plane down, the body being girdled upon return to the base. There are no vital beams or more, which of steel would end the field. This is the solitary value of the monocoque type of fuselage.

With the full gasoline capacity of 5,000 gal., the ship is capable of flying for about 12 hr. at full speed. With the engine described, or some of them shut down completely, the loss of light and the distance covered can be correspondingly increased. Below the gasoline tank are the bomb racks which will carry the bombs. Tied down in the bottom of the fuselage enable them to fall freely when released. The main side is a runway, to enable free access of all the crew to any part of the plane.

Seven guns are carried in the plane, operated from 200 yards, and never protruding the whole field is which comp aircraft may approach, though the gun defense may be assisted if day fighting instead of night bombing should be contemplated.

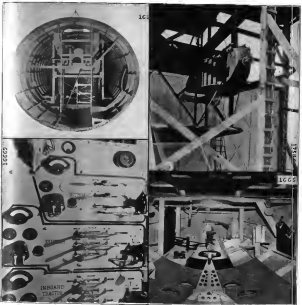
The tail is a biplane structure having an adjustable in-

adjuster. A special thin aeroidal section was used, as this changes the construction and position as good steering is not other.

There are four equal size rudders and corresponding fins, the latter having the intercepting action of the stabilizers. This, while biplane stabilizer is adaptable in motion in flight from the pilot's cockpit. This feature was an important problem in the design, because of the stress involved, which are

as follows: stabilizers and rudders STD sq ft.; fins and rudders 250 sq ft. Then, it may be seen that the stabilizers and elevators form a biplane of 4 ft. chord, and that as the structural problem weight had much more than its usual importance because of the distance of this expenditure from the center of gravity of the airplane. With the exception of the rudders and elevators, the tail structure is of metal construction.

The tail shell is of all-metal construction. The steel pro-



Official Photo, U. S. Army Air Service

Detail of the Barling Bomber—Upper left hand picture shows internal construction of fuselage; upper right hand picture, an engine assembly; lower left hand picture the engine's controls, and lower right hand picture the bomber's compartment



Left: Photo of U. S. Army Air Service

Rear view of the Boeing Bomber, showing outline of wings and tail

is an aluminum alloy bent between a steel head and armored with steel strips, preferably manganese steel, underneath. The head is a solid or riveted head, intended to ride on the ground and having a dovetail shape of underside with the ground. This head serves as a support attached to a cross axle, which is pivoted. From supports of rubber shock absorber rods would extend the axle and the stationary tubular structure attached to the fuselage. As the amount of the rubber spring used is the same as that of a Duff main undercarriage, the magnitude of the forces involved can be appreciated and it will be readily understood that a simple wooden shell would not have proved practicable.

The landing gear is unique. Of course the great weight of the airplane places it under unusual loads. The usual Vee type undercarriage would be entirely ineffective for the gross weight of the airplane and the tire, and it has no reference against overruns. A landing gear has two separate functions, namely, to absorb the energy of landing and to permit the turning of the airplane. The best method of absorbing the energy of landing is to have a shock absorber which should absorb the energy without rebound, that is, no springs are desirable. For turning, the wheels may be further back, allowing the tail end of mainstay land, and some spring device on the wheels is necessary.

Each "track" has two wheels on the front axle and two on the rear axle, all wheels being of the Palmer Aero type with free diameter of 36 in. by 12 in. Before landing the pilot pulls a control which lowers the front wheels causing them to lock first, the amount of landing being absorbed by long stroke oil cylinders. The reactive force at the ground sets the airplane back on the rear wheels and tail skid, on which, when the undercarriage is down. These rear wheels are guided by shock absorber rubber, the rollers may type being used.

The no. 480 hp Liberty engines are mounted on four mainstays, two on each side of the fuselage between the lower and the tail planes and far enough apart to enable an 18 ft. tractor propeller to be used should larger engines be installed in the future. In each of the mainstays the fuselage two engines are placed in tandem, one in each, while in each of the two outer mainstays a single engine is placed driving tractor screws.

There are dual controls over two pilots sitting side by side. The handle is large, as it changes shape of index will be possible during a long flight. A control stick on the pilot's right regulates the operation of the engines. When pushed forward it opens the throttles of all the engines, a balanced movement closing them. A lateral movement opens the throttles of the engine on one side of the airplane only. By a diagonal movement of the control stick the engines on one side are partially throttled, while those of the other side are kept open, the latter motion being extremely useful in accomplishing power turns.

On the left instrument board are an engine revolution indicator, pressure on each side, an air speed indicator, a turn

indicator which gyroscopically indicates any rotating axis on about a vertical axis, a clock and an altitude indicator.

The engine's controls are arranged in two banks, the controls for the three engines on the right side of the airplane being to the right of the engineer, those for the engine on the left side being to his left. Each engine has a throttle, mixture, ignition, and cluster control. The cluster control provides a maintenance adjustment and has emergency action, so that any engine may be used in case of damage, with fuel from other engines or the master control.

Fig. 2 gives a view of the designer's cockpit. The designer sits on the boy-like seat, and looks over the back seats, which is over the V-shaped window in the center of the fuselage. To the right may be seen the bench where the fuel, the current instruments being placed to the left.

Inertia Coefficients of an Airship in a Frictionless Fluid

N.A.C.A. Report No. 164

Report No. 164 of the National Advisory Committee for Aeronautics by H. Bateman deals with the investigation of the apparent inertia of an airship hull. The exact solution of the aerodynamic problems has been studied for hulls of various shapes and special attention has been given to the case of an ellipsoidal hull. In order that the results for the hull case may be readily adapted to other cases, they are presented in terms of the area and perimeter of the largest cross-section perpendicular to the direction of motion by means of a formula involving a coefficient K which varies only slowly with the shape of the hull. In cases where K is 4.637 for a circular or elliptical disk, 0.5 for a sphere, and about 0.33 for a sphere of diameter ratio 7. For rough purposes it is sufficient to employ the coefficients originally found for ellipsoids, but better values are obtained when more exact values of the inertia are needed, estimates may be based on a study of the way in which K varies with different characteristics and for each a set of new coefficients possesses some advantage over one which is defined with reference to the volume of fluid displaced.

The case of motion of an airship hull has been investigated and a coefficient has been defined with the same advantage as the corresponding coefficient for resistance motion.

Aero Exhibition at Göttingen

C. K. Fritze Ltd., Berlin, bookholder to the British Coast has been invited to organize a section of aero or aeronautics at all languages at the International Aero Exhibition at Göttingen.

A catalog will be published listing the literature on flight published from 1918 to 1933. This catalog will also contain advertisements from firms making airplanes, aircraft, propellers, etc.

Organizing the National Airway System

What the Airways Section of the Army Air Service is Doing To Facilitate Flying Across Country

For some time past the Airways Section of the Army Air Service has been studying the continental United States with reference to the requirements of aircraft as traveling between various points, as a result of which a basic system of airways was outlined, involving as it does many features of the high-speed and not routes. The proposed system includes some 20,000 miles of airways, comprising three transcontinental routes and first class routes from north to south. Main stations along the prescribed routes are planned for every 200 miles, where airports would be established with all facilities.

The importance of such national airway system, both from the standpoint of national defense and of commercial air transport is obvious. If the United States were covered with a network of well equipped airways, it would be possible, as Brig. Gen. William Mitchell, Assistant Chief of Air Service, has pointed out on various occasions, to have the main fighting force of the Air Service stationed in the center of the country, where it could be reached on instant notice to whichever point it is needed that may be threatened by hostile intent. Again, the vast transport of civil air transport, a national airway system is an absolute necessity, for similar reasons are impossible for different civil flying can safely be operated between the various centers of population, the necessary ground transportation, with its airports, emergency fields, route markers, and weather forecast stations is organized. The present situation is similar to that which complicated automobile travel in the past before our great national highways were built. The national being our great national highways were built on a system of roads and gasoline stations worked out in all a matter of planning. Capt. Donald B. Wright, Airways Officer of the Army Air Service, is taking attention to the

fact in a recent talk over the radio from Arlington, Va., advocated the aid of civilian interests in laying out airways throughout the country.

Such a solution of this important problem is greatly to be desired, for the most appropriate of the Army Air Service makes it impossible for the latter to organize the national airway out of its own resources. Already the Airways Section of the Air Service has done an immense amount of valuable pioneer work in collecting information of present airways and emergency landing fields throughout the country, and, in particular, in establishing a radio airway between Washington, D. C.; Dayton, Ohio; New York and Norfolk, Va. As an example indicates, this airway, with its airports and emergency fields, as determined and place markers, provides a model for the future national airways which must occur or later some time being if cross-country flying is to become an everyday occurrence. While it is true that a good many automobile supplies are available to assist in some long national highways, in scattered country (especially in sparsely settled areas) are difficult or impossible to get, so that the airway has to arrange for engines, oil, and other supplies everywhere where they can get to the scattered and parts.

The Aeronautical Bulletin

With a view to facilitate cross country flying, the Airways Section is now publishing the information of leading field. A bulletin has collected during the past three years in the "Aeronautical Bulletin". General of these bulletins are issued monthly in loose leaf form, fifty-one having so far appeared and to date of fifty-three which were prepared and are in press.



Outline map of the United States showing national airway system proposed by the Airways Section, U. S. Army Air Service (Baltimore, Md., is situated near St. Louis.)

of the crew or any passenger whose arrival on a flight at the time of which he has been captured has been of special and active assistance to the enemy.

The names of individuals released after giving a written undertaking, as authorized paragraph 10 of this article, shall not be notified to the opposing belligerent, who must not knowingly employ them in violation of this undertaking.

Article 22. Members of the crew of a neutral aircraft which has been destroyed by fire or otherwise shall be released automatically, if they are neutral nationals and are in the service of the enemy. If they are neutral nationals and are in the service of the enemy, they may be made prisoners of war. Passengers are entitled to be released unless they assist in the service of the enemy and are made prisoners of war. Passengers are entitled to be released unless they assist in the service of the enemy and are made prisoners of war.

The belligerent may hold as prisoners of war any individual of the crew or any passenger whose service in a flight at the time of which he has been captured has been of special and active assistance to the enemy.

Article 23. Where under the provisions of article 22 and 23 it is provided that neutral persons are to be released, they may be made prisoners of war, if it is not understood that, if they are not members of the armed forces, they shall be entitled to treatment not less favorable than that accorded to prisoners of war.

CHAPTER VII. BELLIGERENT DUTIES TOWARD NEUTRAL STATES AND NEUTRAL DUTIES TOWARD BELLIGERENT STATES

Article 33. Belligerent aircraft are bound to respect the right of neutral Powers to fly within the atmosphere of the territory of a neutral State from the moment of any act which is the duty of that State to prevent.

Article 34. Belligerent military aircraft are forbidden to violate the jurisdiction of a neutral State.

Article 42. Aircraft on board vessels of war, including aircraft-carriers, shall be regarded as parts of such vessels. Article 43. A neutral government must use the means at its disposal to prevent the entry within its jurisdiction of belligerent military aircraft and to compel them to alight if they have entered such jurisdiction.

A neutral government may use the means at its disposal to compel any belligerent military aircraft which is within its jurisdiction after having alighted for any reason whatsoever, together with its crew and the passengers, if any.

Article 47. The personnel of a disabled belligerent military aircraft forced outside neutral water and brought into the jurisdiction of a neutral State by a neutral military aircraft shall be treated as follows:

Article 48. The supply in any manner, directly or indirectly, by a neutral government to a belligerent Power of aircraft, parts of aircraft, or material, supplies or materials required for aircraft is forbidden.

Article 49. Subject to the provisions of article 48, a neutral Power is not bound to prevent the export or transit on behalf of a belligerent of aircraft, parts of aircraft, or material, supplies or materials for aircraft.

Article 50. A neutral government is bound to use the means at its disposal:

(1) to prevent the departure from its jurisdiction of an aircraft in a mission to make a hostile attack against a belligerent Power, or carrying or conveying by apposition or otherwise the munitions or materials of which would make a hostile attack in a mission to prevent the capture of such aircraft is deemed for any reason a belligerent Power.

(2) to prevent the departure of an aircraft the crew of which includes any member of the combatant forces of a belligerent Power.

(3) to prevent work upon an aircraft designed to prepare it for export in contravention of the provisions of this article. The dispatch of any aircraft designated by persons or companies in neutral jurisdiction to the order of a belligerent Power, the neutral government must prescribe for such aircraft a route avoiding the neighborhood of the military operations of the opposing belligerents, and must exact, where any guarantee may be required to ensure that the aircraft follows the route prescribed.

Article 51. A neutral State is bound to take such steps as the means of its disposal permit to prevent within its jurisdiction aerial observation of the movements, operations or defenses of any belligerent, with the assistance of inflicting the same belligerent.

This provision applies equally to a belligerent military aircraft on board a vessel of war.

Article 52. The personnel of a neutral Power in enemy force or other means at its disposal in the exercise of its rights as a neutral State shall be treated as follows:

CHAPTER VIII. VISIT AND SEARCH, CAPTURE AND CONDEMNATION

Article 43. Private aircraft are liable to visit and search and to capture by belligerent military aircraft.

Article 53. Belligerent military aircraft have the right to enter public non-military and private aircraft to alight in or pass over for visit and search to a suitable harbor immediately accessible.

Refused, after warning, to alight may not be alight or to pass over such a locality for examination except on aircraft to the risk of being fired upon.

Article 54. Neutral public non-military aircraft, other than those which are to be treated as private aircraft, are not to be visited for the purpose of the verification of their papers.

Article 55. Enemy private aircraft are liable to capture in all circumstances.

Article 56. A neutral private aircraft is liable to capture if:

- (a) it commits the prohibited exercise of belligerent rights;
- (b) it contains a person of whom it has had previous record as having been engaged in unauthorized operations after article 10, (c) it is engaged in unauthorized service;
- (d) it is armed in time of war when outside the jurisdiction of its own country;
- (e) it has external marks or uses false marks;
- (f) it has no papers or counterfeit or irregular papers;
- (g) it is manifestly out of the line between the point of departure and the point of destination indicated in its papers and after such inquiries as the belligerent may deem necessary, no good cause is shown for the deviation. The aircraft, together with its crew and passengers, may, may be detained by the belligerent pending such inquiries;
- (h) it carries, or itself constitutes, combined of war;
- (i) it is engaged in breach of a blockade duly established and effectively maintained;
- (k) it has been transferred from belligerent to neutral so manifestly at a date and in circumstances as to raise the presumption of transfer of the aircraft to which no enemy aircraft, as such, is exposed.

Provided that in each case, (except (k)), the ground for capture shall be an act of the aircraft at the time of which the neutral aircraft came into belligerent hands, i.e. once it took its point of departure and before it reached its point of destination.

Article 57. The papers of a private aircraft will be regarded as counterfeit or irregular if they do not establish the nationality of the aircraft and indicate the names and nationalities of the crew and passengers, the points of departure and destination, the dates of the flight, together with particulars of the cargo and the conditions under which it is transported. The logs must also be submitted.

Article 58. Capture of an aircraft or of goods on board an aircraft shall be made the subject of prize proceedings, in order that no neutral claim may be duly heard and determined.

Article 59. A private aircraft captured upon the ground that it has no external marks or is using false marks, or that it is armed in time of war outside the jurisdiction of its own country, is liable to condemnation.

A neutral Power which has captured an aircraft upon the ground that it has disregarded the direction of a belligerent commanding officer under article 56 in relation to examination unless it has given its ground for capture to the belligerent Power.

In all other cases, the prize court, in adjudicating upon the case of capture of an aircraft or its cargo, or of goods on board an aircraft on board an aircraft, shall apply the same rules

as would be applied to a merchant vessel or its cargo or to postal correspondences on board a merchant vessel.

Article 60. Private aircraft which are found upon visit and search to be enemy aircraft may be detained if the belligerent commanding officer finds it necessary to do so, provided that all of its papers on board must be placed in safety, and all papers upon which the aircraft have been previously examined.

Article 61. Private aircraft which are found upon visit and search to be neutral aircraft liable to condemnation upon the ground of unauthorized service, or upon the ground that they have no external marks or are bearing false marks, may be detained, if finding them in the circumstances, would be impossible or would jeopardize the safety of the belligerent aircraft in the vicinity of the operations in which it is engaged. Apart from the cases mentioned above, a neutral private aircraft cannot be destroyed except in the greatest military emergency, which would not justify the officer in command in releasing it as an act of war.

Article 62. Before a neutral private aircraft is destroyed, it or its aircraft must be preserved.

A captain who has destroyed a neutral private aircraft must be held responsible before the prize court, and must first establish that he was justified in destroying it under article 56. If he fails to do this, parties interested on the neutral or on the belligerent side are entitled to reparation. If the capture is held to be justified, though the act of destruction is held to have been inadvisable, nevertheless the prize court is to be held to be justified in the release of the material in which they would have been placed.

Article 63. When a neutral private aircraft is captured or is detained that it is carrying contraband, the capture may be deemed the surrender of any absolute contraband on board, or may proceed to the destruction of such absolute contraband, if it is found that the aircraft is carrying such contraband. This would imperil the safety of the belligerent aircraft or the safety of the operations in which it is engaged. After reference in the log book of the aircraft the delivery or destruction of the goods, and securing, in original or in the revised papers of the aircraft, the capture must allow the neutral aircraft to continue its flight.

The provisions of the second paragraph of Article 63 will apply to a neutral private aircraft which has been a neutral private aircraft on board over or destroyed.

CHAPTER IX. DEFINITIONS

Article 64. The term "military" throughout this rule is to be used as referring to all branches of the forces, i.e. the land forces, the naval forces and the air forces.

Article 65. Except in the case of special rules here laid down and where the provisions of Chapter IX of the Convention of 1907 or other international conventions indicate that maritime law and procedure are applicable, aircraft personnel engaged in maritime service under the laws of a state and nationality applicable to the crew and to the aircraft, and personnel of international law and of the various distinctions and conditions in which the States concerned are parties.

Air Transport in Colombia

A Letter from the SCADTA

Rio de Janeiro, —

We have read with great interest Ladislav D'Ormy's article published in *Aviation* No. 10 of April 5, 1933, entitled "German Air Activities and Latin America." He expresses our sympathy, that our company, the SCADTA, appears to be the foremost of some excellent German aircraft operations in Latin America, as this manner gives recognition of our company with the probable development of German aviation, and the services with which he deals in his well written article.

We feel obliged to state that the possible scheme may be interesting but is not in accordance with the facts. The SCADTA is a Colombian airline in the way made and operated by German nationals, but will at any time supply

the very best due to its service as long as it has been recommended and approved by its reports at the most convenient and fit for the most advanced and convenient purposes. If in the first place of our activities we achieve, we will be able to do so in the circumstances, that at that time German airlines were most appreciated to meet a public air-service in the tropical and subtropical regions, the many valuable climatic conditions. Furthermore, it was then—commonly speaking—more advantageous to buy in Germany, for the purchase value of the Mark was higher than its international rate. Today, things have changed. As you know, German products have continued to prove over in similar in other countries, and there are several American airlines who to be bought cheaper than German airplanes, and considering the lower freight rates from the States to Colombia. Besides that, American airlines have had more time to develop their products and their service to great lengths today.

For some time we have been trying to get American material and have had to meet to ask you the favor of making us one of the former members of your enterprise in which there was a lot of material of the "C" type. We would greatly appreciate it if the same material would be recommended to us the first which have obtained the best results with the product.

The SCADTA is highly interested and to be considered as a member of German Aircraft industry only. Our enterprise is really an emergency service and therefore it is only in the case of need to provide its lines with the best means obtainable today, because it is such a economically.

Your readers would probably be interested to know how we have used this material and what we are willing enough to put our experience of long years (during to the service of American aircraft and commercial enterprises. A co-operation at their facilities could be of mutual advantage for both parties.

(Signed) Eligio
SCADTA COMPANY—AEROLINEAS DE
TRANSPORTE AEREO
Bogotá, Colombia, Dec. 31, 1932.

Aeronautical Patents

Issued May 29, 1933

- 1,456,512. Modification of Air Propeller, Eugen L. Miller, Berlin, Germany.
 - 1,456,513. Propeller, Frank H. Shovell, Jr., Evolam, Mass.
 - 1,456,506. Propeller, William H. MacDonald, Houston, Tex.
 - 1,457,024. Control for Aircraft and the Like, Henry M. Freeman, Los Angeles, Calif.
- Issued June 5, 1933
- 1,457,944. Protection of Metal Airframe or Propeller, Henry Leighton, London, England.
 - 1,457,973. Airplane, Constantin Michel Bonhomme, San Francisco, Calif.
 - 1,458,705. Variable Camber Aircraft for Aircraft, Francis Percy Hyde Bonnie, East Berlin, England.

Issued June 12, 1933

- 1,458,312. Aircraft Landing-Gear-Cord Clasp, Sidney F. Lutz, Dayton, Ohio.
- 1,458,313. Propeller Turb Aircraft, Ernest O. McCauley, Dayton, Ohio.
- 1,458,314. Shock-absorbing Control Mechanism for Revolving Propeller, Ernest O. McCauley, Dayton, Ohio.
- 1,458,315. Propeller Revolving Blade and Wind-Striking Frame, Ernest O. McCauley, Dayton, Ohio.
- 1,458,316. Ballast Winding, Warren D. Burton, Gales, N.Y.
- 1,458,345. Methods Structure for Aircraft, Charles Dornier, Friedrichshafen, Germany, assignor to Societa Anonima Italiana, Gesellschaft mit beschränkter Haftung, Lindau, Germany.
- 1,458,710. Device for Guiding Wind and Fuel by an Airplane in Flight, Stephen W. Tolsonowicz, Buffalo, N. Y.
- 1,458,711. Airplane in the way made and operated by German nationals, but will at any time supply

Learning Radio While Asleep

A novel plan for teaching radio sets to student aviators at the Naval Air Station, Pensacola, has been under trial recently, and, according to reports received, gives every indication of being both practical and valuable.

The plan is to teach student aviators to receive radio sets at high speed while they are asleep. The advantage claimed for the idea is that it enables the student to acquire facility in receiving the code in a fraction of the time that is ordinarily required. In the morning, students who have been particularly slow in making progress with radio practice have been saved from being dropped from the class at Pensacola. The idea originated in the experience of Chief Radio Man Plummer, who in charge of radio instruction in the ground school at the Air Station. In asking for a trial of his plan Plummer cited his own case, and told of how, in practicing the code at shorter five word per minute he fell asleep while the mechanical sounder which he was using continued to send messages to him. When he awoke Plummer claimed that he was able to receive at the rate of thirty-five words, which previously he had been unable to catch more than twenty of twenty-five words. He advanced the theory that in a few hours of slumber his subconscious mind had been trained to the higher speed.

When the proposition was first made to apply the test to student naval aviators in the ground school at Pensacola, it was met with mixed skepticism. But a practical test has convinced the skeptics that the plan is workable. The matter of acquiring a speed of twenty words per minute has now been a regular test to students at the training station, and in a majority of cases has been successfully completed. The speed must be reached by the end of the six month course in order for the student to receive a designation as pilot. In fact, it has been found that the ground school students prepared to be different subjects, and as a last resort the attempt was made to teach them to the required speed by sending radio messages to them while they sleep.

Before training in an airport the student adjusts the receiver in his hand which are used in the regular class. A regular watch is placed throughout the night by expert operators on the receiving key and throughout the night they send at high speed—about ten words in minute of the students capacity to receive. It has been found that in his slumber hours the speed key was used to long while he was asleep.

In discussing his method Plummer claims that it has an additional value in that memory tests which he has made have given excellent results. Later practice in the classroom has been recommended to insure in this manner that would otherwise have taken laborious effort extending over a long period of time.

ZRI Ready for New Trials

Protests on the New rapid aerobically ZRI has resulted in a determined stage within six weeks will, where authorities are confident as to prevent the trials of this huge machine will begin the early part of July. According to recent reports from the Naval Air Station at Lakehurst, the work on the trial of the ZRI was completed the flight instructor, and there remains only the power equipment to be installed and winter flying work to be completed before the dead trials begin.

The control car and two of the power cars for the ship are in Lakehurst, and the other four power cars will be shipped from the Naval Aircraft Factory at an early date. It is estimated that after the ship has been completed in every detail three weeks will be necessary at a minimum for dead trials. During this time every feature of the rapid will be tested under conditions approximating as nearly as possible actual flight operation.

There will be trials run with seven men of the crew at his post and all engines in operation. The ship will be refueled at various angles to test the fuel and other tanks which will be conducted. There is at present sufficient helium on board at the Lakehurst Station for inflation of the twenty gas cells in the hull structure, and deflation of the gas are being made at a rate to insure no delay in operation. It is planned to operate the ZRI with appropriate conveniences which it is ready to take the sea, probably some time in August.

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WISCONSIN	CURTIS-MACOMBER AIRPLANE CO. FLYING SCHOOL Curtis-Macomber Flying School Curtis E. Macomber Milwaukee, Wis.

See also 1933 in The Engineer, The Pilot and The Pilot.

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